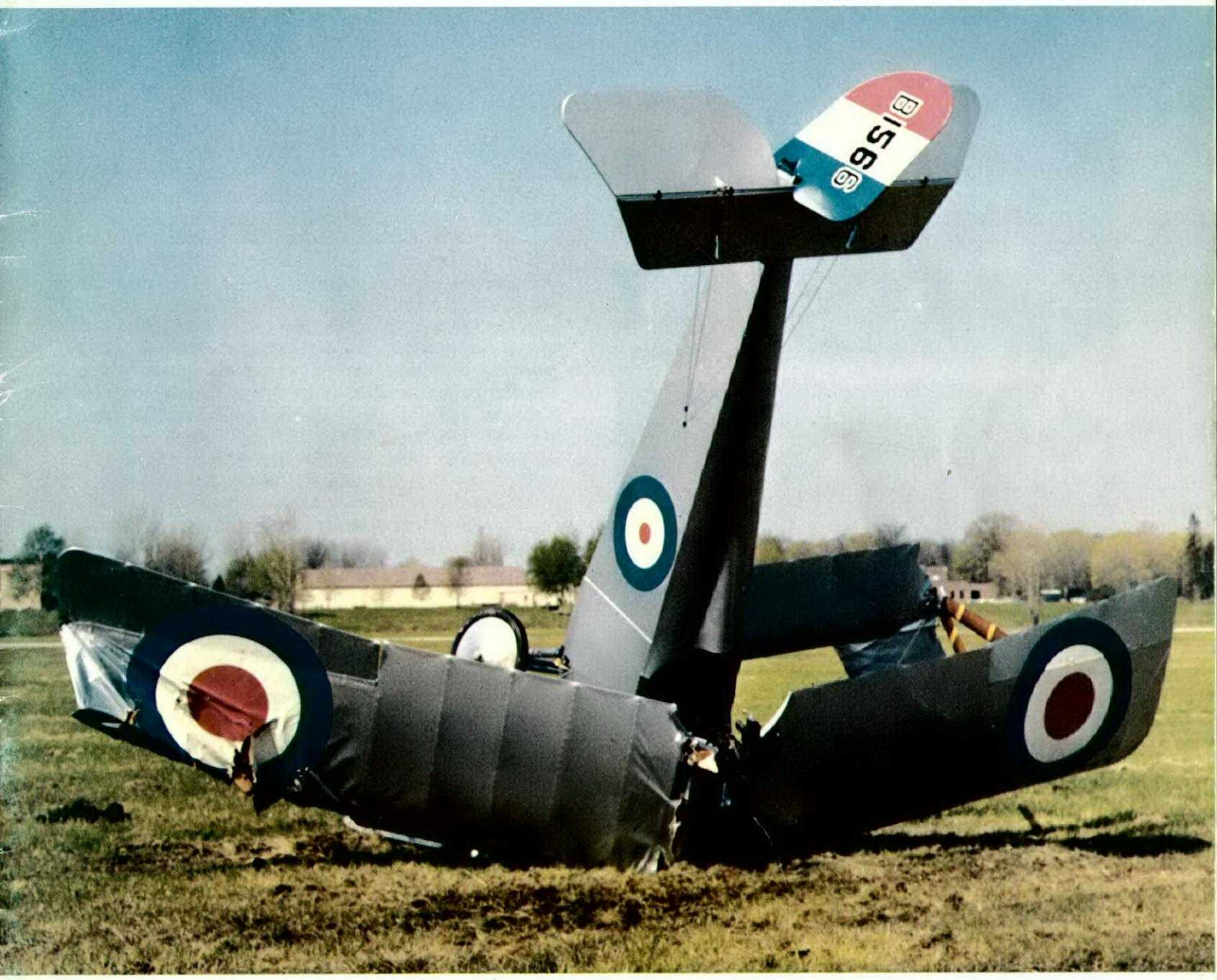
FLIGHT COMMENT

MAY JUNE 1975



CF100 ACCIDENT

CF100788, callsign Mute 237, departed North Bay at 0622Z 17 Oct 73 (0222 local), to act as a target aircraft on an Air Defence exercise. The mission was of approximately two hours duration, well within the endurance of the CF100. After completing the mission without having reported any problems, the aircraft was handed over to GCA control at approximately 0849Z at 2800' ASL and 9NM from the runway. The precision radar approach was normal and at three NM final landing clearance was given. At 2-1/2 NM GCA advised that the aircraft was dropping slightly below the glide path and ten seconds later GCA stated "you are dropping well below the glide path – level off your aircraft – acknowledge". The pilot replied "237, Roger" in a tone of voice that did not betray any anxiety or stress. This was the last contact with the aircraft which disappeared off the radar scope very shortly after this transmission. It was subsequently found to have crashed into Four Mile Lake, 1-1/2 miles off the approach end of runway 26, after having contacted trees on the shore of the lake. Both pilot and navigator were found dead in their seats with no indication of any attempt at ejection.

The weather at the time of the accident was reported as ceiling 1100' broken, visibility ten miles in light snow showers. Although a CF100 which had landed earlier reported moderate rime icing during the approach, it had a descent profile that differed appreciably from that of 788, while a T33 five minutes behind 788 reported no icing during descent on a similar profile.

The aircraft initially impacted trees 500 feet below and three quarters of a mile beyond the point where it commenced going low on the glide path. It was in near level flight as it next contacted more trees 300 feet further on at approximately the same elevation. The scar in the trees on second impact indicates a bank angle of thirty degrees to the right. The aircraft finally crashed in the lake approximately 1500 ft beyond the second impact point.

Extensive examination of the airframe revealed no evidence of pre-impact malfunction that could have caused this accident. Detailed strip of the engines by the contractor established that both were developing power on initial contact with the trees, after which they progressively failed due to ingestion of branches, finally impacting the water at low RPM.

The fact that neither the navigator, who was very experienced on both CF100 and CF101 aircraft, nor the pilot made any attempt to eject indicates that the crew did not fully appreciate just how far below the glide path the aircraft had descended. The pilot, who was relatively inexperienced with only 73 hours on type and 620 hours total flying time, was highly regarded by his colleagues and supervisors.

It is nevertheless possible that he allowed the aircraft to descend below the glide path after having acquired the runway lights visually and was slow to respond to the warning given by the GCA operator as a result of an error in judgement possibly compounded by human factors such as disorientation and fatigue.

As the investigation failed to reveal any technical malfunction of either the airframe, the engines or of related facilities that could have caused this fatal accident, the case was closed as:

> **Undetermined – Most Probable – Personnel – Pilot – Human Factors.** The pilot may have become distracted, while flying in a snow shower, either due to visual illusions created by external aircraft lights and lights on the ground, or by an unusual situation in the cockpit. This distraction, compounded by fatigue, inexperience and possibly mental stress resulted in the pilot allowing the aircraft to descend below the glide path until the aircraft impacted trees and crashed into the lake.

The role of ADC requires that the majority of exercises be scheduled either late at night or very early in the morning in order to avoid conflict with civil air traffic, it is essential therefore that supervisors continuously stress to aircrew, in particular the young and less experienced, the importance of adequate rest before flying. It is an established fact that a tired individual is prone to overlook or disregard indications that require a response, resulting in a subtle incapacitation.

OPERATION: SALVAGE

Capt C.R. Payne
CFB North Bay

At approximately 0500 hours local, 17 October 1973, CF100788 (MK5D) crashed into Four Mile Lake two miles northeast of CFB North Bay. Within 30 minutes of notification the crash crew and firefighters from CFB North Bay were at the site and immediately commenced a ground search of the shoreline and surrounding area for the occupants of the aircraft. Military Police were dispersed to guard the two road approaches to the crash site. A "first light search" using an Ontario Hydro helicopter based in the city of North Bay, and later a helicopter from CFB Petawawa was conducted. The ground and air search yielded numerous pieces of debris scattered over a 600 by 200 ft area of Four Mile Lake's southeast shore. A fuel slick on the lake indicated the approximate location of the downed aircraft. The aircraft had sliced through the uppermost part of a stand of birch and elm trees located approximately 600 feet back from the shore of the lake. It continued on its line of flight for some 1450 feet before initial impact on the lake. Because of the early hour there were no eyewitnesses to the crash.

Four Mile Lake is a popular summer resort with several cottages located in the immediate area of the crash site. A temporary Command Post was set up near one of the occupied cottages which had a telephone available. Later that first day a retired serviceman offered the rental of his unoccupied lakefront cottage for the duration of the recovery operation. The latter cottage proved to be an excellent CP and the presence of the recovery crew did not cause any inconvenience to local residents.

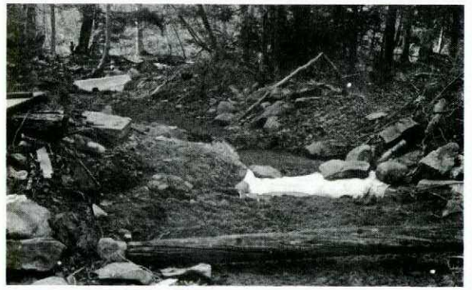
During the initial stages of the operation: the North Bay City Police provided local traffic control; the Ontario Provincial Police provided an 18 ft cabin cruiser and a 3 man scuba diving team; technical personnel assigned to the Base Defence Force were called out to assist the Military Police in guarding the area; and, the Base Ground Search Party was called out to support the overall operation.

One of the first tasks carried out by the Ground Search Party was the erection of "pine bough" dams near the mouth of Four Mile Creek. The dams caused the water level to rise and effectively contained a majority of the fuel slick within the lake. Warm sunny weather, combined with a strong breeze helped to evaporate a considerable amount of fuel thereby reducing the possibility of environmental damage to the surrounding area. Later, the dams were covered with cheesecloth, and peat moss was spread over approximately 1000 feet of the upper reaches of Four Mile Creek to filter out any fuel spilled during the recovery operation. Liaison with concerned government departments was maintained during the operation.

The Department of Environment was consulted regarding the controls initiated to prevent pollution of the creek, and a fish sanctuary located at Four Mile Bay in nearby Trout Lake. The Department was satisfied that the dams and peat moss would prevent excessive pollution.

Because CFB North Bay receives its water supply from Four Mile Lake the Department of Health was contacted and requested to take the necessary action to prevent contamination of the water system by fuel and lubricants and to also ensure that water purity was maintained at the

The author, and Salvage Officer, right and Cpl R. Johnstone of the Ground Search Party review a CFTO before passing information about recovered components to the Board of Inquiry on the Base. At the left are two of the several portable radios used for ship to shore and shore to Base communications during the recovery operation.



To prevent pollution of a downstream fish sanctuary, a series of pine bough and cheesecloth dams were constructed on Four Mile Creek by the Base Ground Search Party. Commencing at the outlet from the lake and covering a 1,000 foot stretch of the creek, the dams, with several cubic yards of peat moss spread behind them, effectively filtered out any fuel that escaped from the lake.

After the removal of the pollution control dams, Four Mile Creek resumes its natural rate of flow from the lake.

Divers of No. 1 Field Squadron enter the water using standard procedures. In addition to rubber rafts, the diving teams used this 19 foot inboard Boat Bridge Erection (BBE) most effectively during the operation. Besides acting as a diving tender it was used extensively to transport wreckage, including a heavy turbine section which had to be towed to the shore.

By the time the recovery operation was completed, temperatures dropped below the freezing mark. If most of the aircraft had not been recovered, nature would have had forced the cessation of the operation. The final dive was made on 9 November with the BBE acting as an icebreaker. As one diver surfaces, his team mate's hand is visible breaking through the ice.

The first and largest piece of wreckage could not be safely placed onto the Class 80 Heavy Ferry. An extremely manoeuverable piece of equipment, the Ferry directed by the man at the far right, is shown making a broadside approach to the shore. For his repeated nautical achievements in directing and guiding the Heavy Ferry throughout the operation MCpl Daryl Brewster became legendary in the North Bay area as the "Bargemaster".

accepted standard. The water supply to CFB North Bay was not interrupted at any time during the salvage operation.

The aircraft had disintegrated on impact and many pieces of jagged wreckage were scattered over a wide area, later determined to be approximately 450 feet long by 200 feet wide and submerged in approximately 20 feet of water. Because there was no evidence that the crew had ejected, it was assumed that the charges in the egress system were still active and could accidently be fired. Under the circumstances it was desirable to have technical assistance underwater.

Fortunately the NCO in charge of the crash crew, Sgt V.V. Yahnke, was a qualified scuba diver and was aware of other members within the BAMEO's organization who were also qualified scuba divers and who belonged to the CFB North Bay Scuba Club. Sgt Yahnke and Cpl L.B. Laycock volunteered to assist with the diving operation. As soon as was possible a 5-man diving team – three OPP and two military – commenced the underwater search for wreckage. The divers were directed to mark the position of the larger pieces of wreckage by attaching buoys (empty plastic bottles) to them. In the meantime it was realized that assistance was required to raise wreckage from the bottom of the lake. The job of locating and marking the larger pieces of wreckage and bringing smaller pieces ashore was accomplished during the period 17-22 October. The small pieces of wreckage on the approach to the lake were plotted then gathered up, placed in a tent on the shore for immediate investigation by the Board of Inquiry, then sent to a quarantine area on the Base.

On 18 October No. 1 Field Squadron based at CFB Petawawa was requested to send a representative to evaluate the situation and determine whether or not they could bring the wreckage to the surface. Initial coverage of the crash site by the divers indicated that the largest and heaviest – approximately 1½ tons – single piece of wreckage consisted of half the port wing, the port undercarriage with the centre section main spar, and part of the port engine exhaust tunnel. It was determined that No. 1 Field Squadron could recover the wreckage with the men and equipment that were available from their own and those resources of CFB Gagetown. The administrative procedures necessary to receive assistance from another Command were initiated immediately.

By 1300 hours Monday 22 October a contingent of 19 Royal Canadian Engineers (RCE) from No. 1 Field Squadron arrived at Four Mile Lake and began construction of a "Class 80 Heavy Ferry", which in turn carried a mobile crane used to raise the wreckage from the bottom of the lake. The "Ferry" is the only one of its kind in Canada and is on the inventory of No.2 Field Squadron, CFB Gagetown. At the time of the accident it was being used on an exercise at CFB Petawawa. In addition to the men and equipment necessary to accomplish the recovery of the wreckage located by the OPP and CFB North Bay divers, a team of six divers from No. 1 Field Squadron were attached to the contingent from CFB Petawawa.

The first and largest piece of the aircraft was removed from the bottom of the lake at 1300 hours Tuesday. By Thursday night all major pieces of the aircraft which were marked by buoys had been recovered and the "Ferry" was dismantled. Although the complete nozzle box and turbine assembly from one engine was still missing it was determined that if found it could be towed close to shore and hauled from the water by a military pattern "Wrecker" vehicle. The successful recovery of the turbine was accomplished 2 days after the "Ferry" returned to CFB Petawawa. The OPP divers

cont'd on page 17

MEMORANDUM

3275-6-1 (SMetO)

11 Jan 75

Distribution List

WEATHER BRIEFINGS AND TELEPHONE REQUESTS

Reference: A. Matthew 16, Verses 2 to 4, King James Version

1. Lately the Weather Officer has noted an increase in the number of obscene telephone calls from the "flying" squadrons and Group Training Transient Flight, taunting and ridiculing the duty forecasters. Frequently these are accompanied by unreasonable demands for information, such as asking for the weather at some alternate, or a Baden forecast for the afternoon, or an outlook for the next day even. Forecasters, who are by nature sensitive, obliging intellectuals, gradually become hardened (or at Baden semi-hardened) to such barbs and largely ignore such requests.

2. However, of late a new tack (heading) has been taken, in which the Scriptures are being referred to with a mind (albeit small) to unsettle the forecaster and undermine his confidence. Aircrew have remarked that "if Noah could give a forty day outlook, why can't you give us a forecast of what's going to happen in the next forty minutes". Or, "Joseph could predict seven years of good weather followed by seven years of lousy weather, and you guys can't even tell us if there'll be any snow on the Feldberg tomorrow". Big Deal. The ancient forecasters had Divine guidance, whereas we have to depend on weather maps, observations, three PIREPS from the early 1950s, and a handful of Chaplains.

3. Some pilots have really outdone themselves in their efforts to create mischief and make a mockery of a respected science. When asking for the terminal forecast, they say "Will the sky be red tonight? ", or "Does it look like a red sky in the morning? ". This obviously alludes to Ref A the basis of the adage "Red sky at night, shepherd's/sailor's/pilot's/peasant's (land element) delight, Red sky in the morning, shepherds. . . etc., take warning".

4. The Met Section is well aware of Ref A and can explain it in terms of the following promise:

a. The sun usually rises in the east and sets in the west

b. Weather systems usually move from west to east

c. The bases of some clouds appear red when illuminated by a rising or sinking sun

If clouds overhead or to the east are reddened by a setting sun, then presumably there are no dense clouds (or weather systems) interfering with the suns rays far beyond the western horizon. On the other hand, if rays from the rising sun redden clouds overhead or to the west, then a weather system may be approaching.

5. We have no argument with Ref A, as we fully understand the theory which gives credence to this Sacred quotation (and besides, we don't want to be struck by lightning or something worse). But we can hardly be blamed for taking offense, when our very best Prognostic Chart is derisively referred to as an "Agnostic Chart" i.e., a chart that nobody believes in. For the sake of those who would flaunt the Scriptures in the face of the OFFICIAL TERMINAL FORECAST (TAF), we might also point out that:

a. NOT ALL weather systems move from west to east

b. NOT ALL clouds are associated with moving weather systems

c. The Scriptures ARE NOT the authorized text for Meteorology at Training Command schools or for Instrument Rating exams

d. Many pilots couldn't tell a red sky from a green sky even if they saw one

6. By now, it should be apparent that the purpose of this memorandum is to cheer up the rather sober, dull, listless members of our flying circus, who by this time every year find that the winter weather is just too much for them. But spring is yet to come. Mark Twain, (yet another humorous forecaster of note) in addressing The New England Society on December 22nd, 1876, said, weather goes "through more business in the spring than in any other season. In the spring I have counted one hundred and thirty-six different kinds of weather inside of four and twenty hours". At Baden Soellingen we counted one hundred and forty-three, all of which were included in a single twenty-four hour TAF issued last year by Lahr. (This has been submitted to the Guiness Book of Records for the world's longest TAF).

7. Benjamin Franklin, who is said to have worked on the original version of "Weather Ways", commented in 1735 that "Some are weatherwise and some are otherwise". Shakespeare, in a sonnet asked, "Give not a windy night, a rainy morrow? ". To which the local Metman probably replied, "For sooth, not necessarily, as it dependeth on many factors. There's a chance that this front to the north may accelerate, in which case, etc. etc. etc."

D.G. Tesch
Major
SMetO
235

DISTRIBUTION LIST

Action	Information
CO Air Ops Sqn	D/Comd 1 CAG
CO 421 TAC (F) Sqn	Chap (P) 1 CAG
CO 439 TAC (F) Sqn	Chap (RC) 1 CAG
CO 441 TAC (F) Sqn	
OC GTTF	
GFSO	
GTEO	
TWMO	
Maint Test Pilot	

National Aeronautical Collection example of "hard nosed" Mitchell. This nose was sometimes modified to provide for the mounting of eight forward firing fifty calibre machine guns. American Units in the South Pacific mounted a 75 millimetre cannon in some aircraft used in the anti shipping role. Apparently it was quite impressive in effect.

The B-25 Mitchell gained fame as a medium bomber during World War II where it was employed in virtually all combat theatres. Produced in great numbers by "North American" it was powered by two 1700 horsepower Wright Cyclone engines which gave it a maximum speed of about 300 mph.

The B-25 was employed by the RCAF in the postwar era as a navigator and pilot trainer and as a tactical bomber with the auxiliary. A representative example is housed in the National Aeronautical collection in Rockcliffe.

B-25 in warpaint. This photo illustrates the "soft nosed" version.

Mitchell Flashback

Anyone who ever had an opportunity to fly in a B-25 will testify that the aircraft, although a classic in its own time, had its eccentricities. The Editor, a mid sixties jet only type can personally testify that it can prove a definite handful in simulated engine out situations although its modest speed range gives a little time for thought.

This month's flashback gives a little pictorial evidence of the B-25s *actual* twin engine out performance.

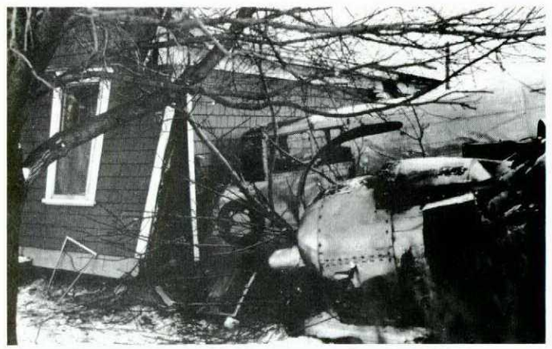
B-25 Mitchell 5227 departed Vancouver at 1936Z 17 Feb 57 and terminated its flight with a power off crash landing in St. James Manitoba as a result of fuel starvation on final approach. This accident was the result of several factors including:

- Fuel gauge inadequacies – which had been known for over a decade at the time of this prang
- Engineering Order inadequacies – which made accurate preflight fuel planning extremely difficult
- An abnormally high rate of fuel consumption
- Pilot error in delaying emergency procedures to a point where they were no longer effective (e.g. requesting straight in approach, landing at airfields overflown enroute)

Unfortunately this aircraft was neither the first RCAF aircraft to run out of fuel unnecessarily nor the last. It was however an excellent example of a situation which might have been disastrous turning out a lot better than could reasonably have been expected.

Mitchell 5227 was carrying 6 souls on board when it came to an untimely end embedded in the wall of a frame house in Metropolitan Winnipeg. Three of the occupants of the aircraft were uninjured and three received minor injuries. North American Aviation built their light bomber to take a lot of punishment and it lived up to design specifications in this case. No fire occurred naturally, because there was no fuel to

cont'd on page 19



It must have been exciting for the occupants of the front seats. Undoubtedly a cockpit recording would have been priceless.

One slightly compressed B-25.

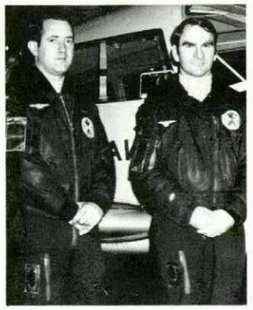
GOOD SHOW

CAPT A.T. GRIFFIS

Capt Griffis was a member of the Snowbird Air Demonstration Team. While approaching for the opening formation manoeuvre of an air display at Harbour Grace Newfoundland, his Tutor aircraft sustained a strike by a seagull in the left intake. Parts of the bird penetrated into the luggage compartment through the fibreglass lining of the intake and other portions were ingested by the engine. On experiencing the resultant compressor stall, Capt Griffis pulled the aircraft up and carried out established stall clearing procedures. This resulted in an indicated RPM of between 50 to 55 percent for approximately 30 seconds accompanied by a continuous rumble. He then increased power to 81 percent and was able to maintain 130 knots in a shallow climb towards St. John's where he landed the aircraft safely from a precautionary pattern.

Capt Griffis' reaction to this dire emergency at low altitude is considered to be exemplary.

Capt A.T. Griffis



Capt L.G. Van de Reijt and Capt A.M. Kuijpers

Capt G.A. Houlahan, MCpl D.E. Gunn

CAPT G.A. HOULAHAN, MCPL D.E. GUNN, CAPT A.M. KUIJPERS AND CAPT L.G. VAN DE REIJT

The pilot of a Cessna 172 civilian aircraft CF-YNE became uncertain of his position as a result of poor weather conditions. Winnipeg area Control Centre advised CFB Portage ATC of a lost aircraft in the Brandon area. Capt Houlahan received an intermittent and faint signal on the direction finder and proceeded to steer YNE to Portage. MCpl Gunn on Radar Control picked up the aircraft and vectored a Portage based Musketeer piloted by Capt Kuijpers and Capt Van de Reijt to intercept it. A successful intercept was made and the aircraft was directed to a safe landing at Portage. The aircraft had approximately five gallons of fuel remaining when it landed at Portage.

Capt Houlahan, MCpl Gunn, Capt Kuijpers and Capt Van de Reijt are to be congratulated and commended for the efficiency and professionalism shown in this emergency.

CPL G.E. PETERSON

Cpl Peterson was assigned to start a Tutor aircraft, and while waiting for the pilot to complete his strap-in procedures, he carried out a quick walk around. He discovered that the nosewheel steering clutch plate spring retaining nut was loose and the split pin missing. The flight was aborted.

Carrying this inspection on to succeeding starts, Cpl Peterson found another aircraft with the split pin missing from the retaining nut. As a result of Cpl Peterson's discoveries a local Special Inspection was carried out on the 73 base aircraft. Nine were found to have missing or broken split pins.

Cpl G.E. Peterson

Cpl G.S. Cuillerier

Cpl Peterson's diligence and keen attention to an area not normally within his area of responsibility resulted in the avoidance of possible accidents through nosewheel steering failure.

CPL G.S. CUILLERIER

Cpl Cuillerier is employed as an airframe technician in VU 33 Squadron, CFB Comox. During a periodic inspection on a Tracker aircraft he noted that paint had chipped away from a wing fold lock fitting. Cpl Cuillerier investigated further and found the fitting to be cracked. Not satisfied with this he proceeded to examine the remaining fittings, three of which were found to be cracked.

Cpl Cuillerier is commended for his keen observation during a routine inspection. Had this problem not been detected the outer wing panel could have separated from the wing centre section at the fold joint.

GOOD SHOW

CPL R.S. HARVEY, CPL C.B. O'CONNOR AND CPL R.W. SMITH

Cpls Harvey, O'Connor and Smith formed the starting crew on a Boeing CC137 departure. As the aircraft pulled out of its position and moved abreast of the crew, they observed something unusual about one of the inner main wheel tires as the aircraft turned. Servicing Control and Duty Ops were informed of the problem and the Tower instructed the aircraft to return to the ramp. Inspection confirmed that the left front inner tire was completely flat, the fuseable wheel plug having released. The tire had been normal during the preflight inspection but had gone flat during the initial movement of the wheel.

The alertness displayed by this start crew in doing a visual "last chance" check of the aircraft as it taxied away exemplifies the spirit of accident prevention.

Cpl R.S. Harvey, Cpl C.B. O'Connor and Cpl R.W. Smith

CPL P.A. HENNICKE

During a quick turnaround with the Snowbird Aerobatic Demonstration Team, Cpl Hennicke was carrying out a routine A check on a Tutor aircraft. In moving the left hand aileron spring tab, Cpl Hennicke felt what he thought to be unusually low tension.

On questioning the pilot, he was assured that ali had seemed normal during the previous flight. Still not satisfied Cpl Hennicke returned to the aircraft to make one final check. He found that by positioning the left hand aileron in the full down position and shaking the aileron spring tab, a spring rod would slide down and jam the tab assembly. Further investigation revealed that the spring rod had been wearing for some time and had finally sheared.

Cpl Hennicke's professional action undoubtedly averted a serious inflight incident during a succeeding flight.

Cpl P.A. Hennicke

MCPL N.R. WOOD AND MCPL H.G. McNEIL

MCpl Wood and MCpl McNeil received an urgent Special Inspection on the instrument inverter in an Otter aircraft. They noted during this inspection that the UHF inverter was similar in construction but not mentioned in the S.I.

By carrying out a unit S.I. on the UHF inverter also, they found a loose retaining nut on all installed inverters. Immediate follow-up action resulted in a fleet S.I. of both inverters.

The professional teamwork and initiative of MCpl Wood and MCpl McNeil averted a possible component malfunction which would have led to a serious aircraft incident. The extra time and effort displayed on this inspection is indicative of their professionalism and they are to be commended for their action.

MCpl N.R. Wood

MCpl H.G. McNeil

Pte R.S. Bennett

MCpl A.A. Ekman and Cpl D.E. Millman

MCpl D.G. Register

CPL D.E. MILLMAN AND MCPL A.A. EKMAN

Cpl Millman was student Flight Engineer and MCpl Ekman staff Flight Engineer on a long-range CC115 Buffalo training trip, staging through Frobisher Bay. During a routine systems check, Cpl Millman noticed high battery voltage with a constant ampere load on the ammeter. Trouble-shooting identified the battery charging relay as the most likely problem but after inspecting this relay, he was not convinced from its appearance that it had failed and decided to check the wiring from the battery to the main distribution bus. Assisted by MCpl Ekman and working outside in darkness at minus ten degrees fahrenheit, the two engineers discovered a chafed cable that was placing a dead short on the electrical system. The location of the chafing was in the roof of the aircraft, hidden by the battery charging relay and became the target of a Special Inspection on all other Buffalo aircraft.

Cpl Millman and MCpl Ekman exhibited commendable thoroughness under trying conditions.

MCPL D.G. REGISTER

While completing a repair of a broken wire in the cockpit of a CF104, MCpl Register noticed that the left hand cockpit control cable tunnel cover appeared to be incorrectly installed. An airframe technician was contacted and confirmed that the cover was in fact installed top side down. A serious potential inflight hazard existed in that the stabilizer, aileron or rudder control cables could have caught on the dimpled portion of the lighting hole of the panel in this inverted position thereby restricting flight control movement.

MCpl Register based his judgement on his knowledge of general aeronautical technology as the Engineering Orders do not specify which way is right. Subsequently it was established that eight more aircraft had incorrectly installed panels.

PTE R.S. BENNETT

Pte Bennett was assigned parking and A check duties at CFB Moose Jaw. He was proceeding to the back line to park incoming aircraft when he noticed what appeared to be a small dent on the outer tip of the left hand aileron of a Tutor aircraft parked in the front line. On investigation he found the left aileron cracked for a length of approximately two to two and one half inches.

Pte Bennett's alertness and subsequent follow-up action prevented what could have been a serious inflight control problem.

Six Honest Men

I have six honest working men
They taught me all I knew
I call them what and where and why
And how and when and who

RUDYARD KIPLING

These wise words are quoted often on management courses to stimulate problem solving. They are especially applicable to safety problems. Let's examine Kipling's six honest men in a safety context.

What? What area should we be concerned with? The field is wide open – EVERYTHING and anything connected with safety.

Where? Where should we be looking? EVERYWHERE. Any area of concern or responsibility where a hazard or a potential for an accident is present. On the flightline, in vehicles, in the hangar – everywhere.

Why? It is the responsibility of every officer or man in the overall aviation environment to alert others to real or apparent hazards, even though it may not be his personal responsibility to affect the corrective measures. The life you save may be your own – or someone elses – the resources you preserve belong to all of us.

How? How can we help? By bringing the situation to the attention of people in a position to effect the changes. This can be done by using normal communications, UCRs or Flight Safety reports.

When? When should we act? Immediately. Any person becoming aware of a situation or condition with an accident potential must act immediately to remove that potential. Otherwise the classic "if only I had . . ." becomes operational.

Who? Who should involve himself? Everyone. Safety is an inherent responsibility of everyone in the military environment, a duty of trust placed in you by your comrades.

Since this is a flight safety publication this is written with the intent of preventing aircraft associated accidents and eliminating potential for these accidents. It becomes apparent though that Kipling's six men of wisdom can be applied to every occupational field. We in DFS dislike "after the fact" recording of accidents. It is concomitant with our duty that potential for accidents be eliminated. It is for this purpose that we borrow Kipling's six men of wisdom and ask you to apply them to your job.

Maj. Carl Lagroix
NDHQ/DFS

The Simulator Syndrome

Paul Felton
United Air Lines

It was a typical VFR day at Megalopolis Airport, U.S.A. The late afternoon sun slanted through a stagnated air mass stirred only by a light breeze. A haze made from equal parts automobile exhaust and industry smoke, with a few million human exhalations thrown in, diffused the sunlight until the city appeared in shades of brown. Megalopolis Airport tower advertised the weather as clear and four miles visibility, haze and smoke. Approach control recommended ILS 36 approaches, but would readily give a contact approach to any aircraft. Uncontrolled VFR traffic was normal for late afternoon. One controller considered it a bit light since he could count only seven unknowns on his scope.

Major Airlines Flight 373 had experienced a tedium-filled flight to Megalopolis. Aside from one hilarious joke by the captain over Forty Wayne, the four-plus hours had been mind-dulling routine. Now, descending through 8500 feet, 373 was well above the Megalopolis haze. All three crew members were forward in their seats, straining to find that glint of sunlight or ink-dot silhouette that would mean unreported VFR traffic.

The pilots of Light Plane 42U were also scanning the sky around them for traffic. Their route from Megalopolis Suburban to the mountains was a familiar one. They normally filed VFR, but were proud of their instrument ratings and their ability to handle any IFR condition within reason. Their aircraft had a full panel, including DME, and they planned to install a transponder in the immediate future. A weekend in hills where the air was not brown beckoned happily ahead as 42U leveled at 4500 feet westbound and held a course safely outside the outer marker of Megalopolis Municipal.

When Major Airlines 373 checked out of 5500 feet, approach control gave the flight a final vector, cleared them to descend to 1700 feet and intercept the runway 36 localizer, told them to contact the tower at the outer marker, and called slow-moving non-beacon traffic at ten, two and three o'clock. Three crewmembers peered more intently into the brown haze, checking the clock codes called by approach control. Their scan was momentary however, for there were required instrument procedures that took precedence over merely looking for unknown VFR traffic. As 373 passed through 5000 feet the captain set his heading bug on the new radar vector, checked his approach plate for the inbound ILS course, turned on his flight director and briefly monitored its operation, looked and reached back to flick on the aural for the outer locator, and after checking the flap position indicator called for more flaps. The co-pilot's hands and eyes flew about the cockpit almost as quickly as the captain's. The second officer watched as the co-pilot switched from the omni to the ILS frequency and identified it, set the inbound ILS course on his bug, turned on and checked his flight director, visually checked the movement of the flap handle to confirm to the captain's order for more flaps, selected ADF on his navigation selector switch and monitored the needle, and reached back to turn on the aural for the outer marker.

The pilots of light plane 42U knew they were dead when the shadow suddenly fell across their instrument panel. Their eyes registered a flash of silver wings. The airplane disintegrated at impact and its myriad pieces fell almost straight down. A ground witness said that he thought one wing took almost a minute to flutter to the earth.

Major Airlines Flight 373 shuddered only slightly at impact. By sheer strength and professional skill the captain and co-pilot kept the airplane flying for an estimated twenty-five seconds. Then the nose dropped sharply and 373 rolled steeply to the right. The Megalopolis skyline vanished. In its place a stinking salt marsh filled the windscreen. The mud and slime spewed by the crash covered the jagged pieces and jumbled humanity of Flight 373.

The accident described is strictly imaginary and has not yet happened – but it will. We are training for it with a deliberate intensity. The primary criteria for pilot training and evaluation have become a knowledge and use of the sophisticated navigation and approach instruments installed in today's jets. And no matter how beautiful the weather, every instrument is utilized on each and every approach.

The aid for this instrument training, the simulator, is a wonder to behold. There it sits on the hangar floor, a computerized cockpit of the applicable airplane complete with all the sounds and instrumentation of its flying kin; so realistic in simulated flight that a knock on the cockpit door brings instant expectations of a stew with coffee. It is in this instant airplane, run by electricity instead of jet fuel, that a pilot becomes familiar with his new aircraft. Surrounded by opaque windows, so no external stimuli may intrude, the trainee can concentrate fully on his cockpit world. It is here, based on his instrument procedures, his exacting flying of the navigation or approach aid, his smooth instrument flying, that a pilot is judged ready to step forth and fly the passenger-carrying version of his new aircraft.

Because the simulator is so very good at playing airplane, the transition to a cockpit that tows a pair of wings and a tail along is remarkably easy. The criteria for judgement of the pilot in the airplane are the same as for the simulator; nice smooth flying, airspeeds within a knot or two of the climb/descent speeds, exacting adherence to headings and altitudes, approaches right down the localizer and glide slope. Upon completion of this intensive training a pilot can fly the new aircraft almost perfectly on instruments; and if awakened some early morning from a deep sleep and posed an involved question about instrument procedures could immediately recite the appropriate SOPs. The pilot's indoctrination in the art of mid-air procedures is finished, and another IFR-oriented, use the instruments, concentrate on the instruments all the time man, is pumped out of the training phase.

The excellent training carries over to line flying. Every descent and approach, no matter what the weather, is made with full IFR procedures. Tune this. Identify that. Stay right on speed. Track perfectly. Fly the localizer. Set up the missed approach navigation aids. SOPs flash by with relentless precision. The instrument procedures execution is heart-warming. The mid-air potential is heart-rending.

What has happened to the heads up descent and landing approach? Why, in the past few years, has a centered needle or flight director bar become more important than a descent traffic avoidance scan? Where is the sweaty armpit, buttocks-tightening fear of uncontrolled VFR traffic that should pervade the cockpit at lower altitudes? The emphasis has shifted alarmingly from a "U see um" descent and approach to a full instrument approach.

Consider an average year of flying on the line. True, there are days when every terminal seems to be just above limits and it is ILS after ILS. But admit it, most of the flights are in visual conditions, terminated by a descent and approach in pretty fair weather. On the majority of terminal area operations the fantastic IFR instrumentation and pinball lights scattered across the panel are not needed. The field and runway are visible ahead. A well-defined horizon sits just above the glare-shield. A missed approach, if needed, would involve a simple turn downwind for a VFR re-entry. Why then, when the majority of descents and landings in an average year are visual, is it necessary to set up every possible IFR instrument in the cockpit?

It is time for a re-emphasis in training and line flying. It is time to recognize the most dangerous situation in air line work; an approach through VFR unknowns. Right now, today, it is adamant that some new criteria for air line flying be adopted. It is time to sacrifice a few knots of airspeed, a few feet of altitude, a dot or so of navigation, and hearken back to one very basic, life-saving precept of flying: the VFR scan.

Be it military or civilian flight training, one of the first techniques taught a fledgling airman is the art of driving an airborne machine through the skies without ramming trees, mountains, large birds, or other aviators. The technique is simple: spend about 80% of the time outside the cockpit and 20% inside. Develop a collision-avoidance scan that sweeps from left to front, to inside the cockpit, to front, to right, to front, to inside the cockpit and continues in this cycle from start of taxi until the aircraft is shut down and chocked. Recognize that the eye tends to focus a few feet in front of the aircraft (which is fine if you are only interested in who you hit) and train the eye to focus at infinity. Scan by sectors since visual acuity drops alarmingly if the eye is not looking directly at the distant traffic.

These simple precepts have somehow been deleted from air line flying. They have been sacrificed on the altar of constant instrument practice. Join me in an effort to bring back the full utilization of the best collision-avoidance device yet developed, the human eye; or join me soon at the church of your choice to mourn a perfect instrument pilot and the innocents who were along for the ride.

MAC FLYER

Flight Safety Bulletin

During a recent night exercise, an interceptor crew's zeal to accomplish their mission objective and a combination of other factors put them behind the "old eight ball". This then is our story because we were that crew:

It all began after we were dispatched to the QRA to set up our aircraft on five minute alert and to await the go/no go decision on the exercise. At this point we didn't think the exercise would go as the weather wasn't exactly the greatest and Bagotville, with its unreliable TACAN was the only suitable alternate. Shortly thereafter we were scrambled and got airborne first.

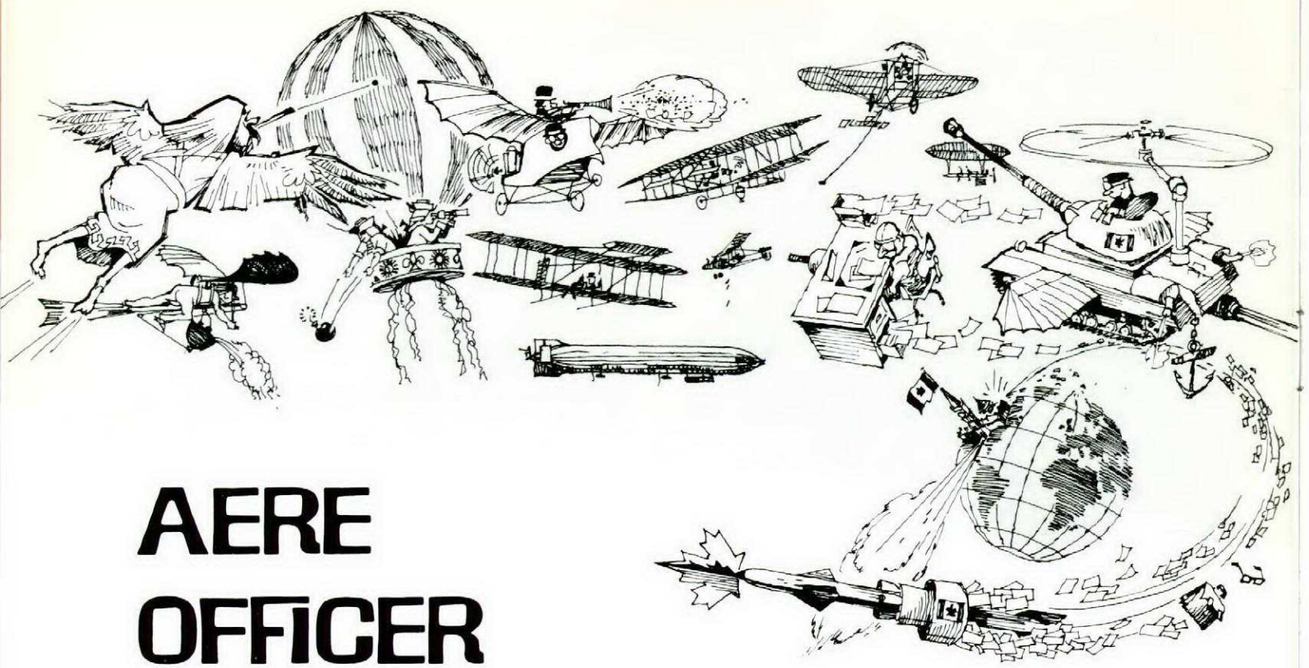
After some length of time on CAP and anticipating recovery within thirty minutes, we checked the weather at our base and the designated alternate. At this juncture in our tale, the actual weather and forecast at our home base satisfied the criteria for selecting Bagotville low fuel. Therefore, when committed on our first and only intercept of the night, we confirmed that we had sufficient fuel to complete the intercept and RTB with at least Bagotville low fuel. We eagerly pressed on with the intercept and achieved "the hack".

Homeward bound, we determined that we still had sufficient fuel to be on approach with Bagotville low fuel. Then things went for "cornflakes". GCI cleared us to a fix different from that given to a preceding aircraft and considerable RT chatter was necessary to resolve the conflict. As luck would have it, the runway was closed for 10-15 minutes because an aircraft had taken the arrestor cable. Still, no sweat. On handover to our TCU, we were advised that we were number four in the holding pattern. Things started to smart when the pilot of the aircraft on the runway advised over the RT that he was going to be there for a long time. Pandemonium reigned supreme as everyone started to divert to Bagotville. The situation was starting to get tense now because our fuel was slightly less than the Bagotville low fuel SOP. Furthermore, we realized that we were going to be at the end of a great gaggle of aircraft diverting to Bagotville. We started to pucker as we found ourselves behind the old eight ball.

We quickly checked the weather and braking action at Loring AFB. Weather was VFR and braking action was reported as fair. We recovered at Loring and shutdown with 2500 lb remaining.

This story ended happily; however, we learned a very valuable lesson, namely, that our enthusiasm to achieve the mission objective, "to get the hack", almost put us behind the proverbial eight ball because of our fuel planning based on minimum requirements.

BFSO COMMENTS: The alternate was designated as BG high fuel due to forecast visibility and anticipated slippery runway conditions.



AERE OFFICER

FINAL QUALIFYING EXAMINATION

Read each question thoroughly. Time limit is 4 hours. All written answers are to be in the official language of Canada which is NOT your mother tonge as shown in your records. BEGIN NOW.

Discuss the evolution of military air power from its inception. Using the designer Daedelus as your starting point, cover in detail all types, models and marks of military vehicles capable of flight. Emphasize the impact that Canadian military thought has had on the airpower in the world, and extrapolate to the year 2000. Be brief, concise, and specific.

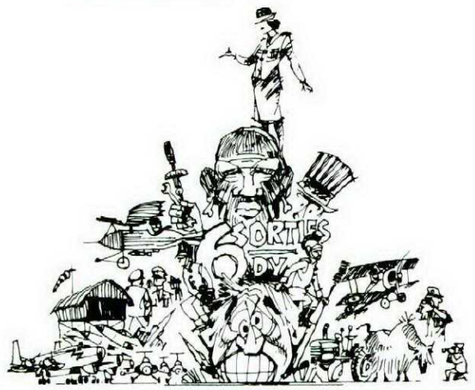
You are the AERE officer in charge of 6 ARGUS, 12 CF104, 4 CF101, 65 CF5, a CC137, a Sopwith Camel, and a Muskox. Your resources include: one small hangar (100' x 15' x 8 1/2'), one Czechoslovakian farm tractor with harrow, 23 Photo Techs PL4, 1 Radar Systems Cpl PL6, 14 Safety Systems Techs PL2, and a Nurse Capt (L). Tools and GSE will be provided by a friendly power. This force will be deployed to an African country for 8 weeks during which time six operational sorties per aircraft per day will be required. You are allowed additional manpower provided that it consists of Arty PL2 tradesmen.

(a) Write the maintenance portion of the OPs order for the deployment, operation and return of the task force, and include a PERT analysis for the deployment only.

(b) Transportation for the deployment will be by HMCS Provider (excluding the CC137) and a model of the ship to the scale 1":1.7 fathoms has been provided for you. Write the Ships Hold in Transit (S) plan for Provider.

(c) Prepare a synopsis of the fuel, weapons, and other expendables required.

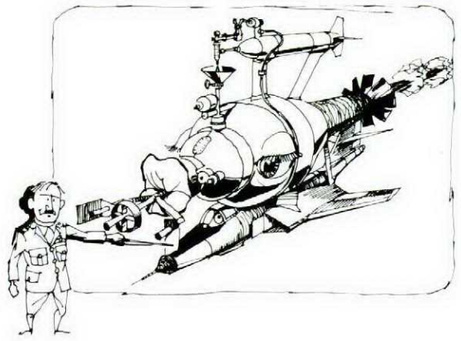
(d) Discuss briefly the problems you would expect to encounter, if any.



Produce a practical design for a single, compact, air portable, air droppable, easily maintainable, waterproof, piece of GSE to perform the functions of all GSE now in use in the CAF. It must be operable by one untrained tradesman in temperatures from minus to plus 80 degrees centigrade. MTBF must be greater than 6 months, and budgetary considerations limit the cost per unit to $1208.35.

In five minutes you will be placed in the rear cockpit of a CF5D which will takeoff, climb with AB to 28,000 feet, catch fire, and explode. In the rear cockpit you will find the following: 15 lbs of potassium nitrate, 3 feet of aluminum 3" OD tubing, a flint, a steel, EOs 05-205D-2C & 4 (French version), a knife, a needle, 500 feet of nylon cord, a used mail bag, 47 sq yds nylon cloth, 2 spools thread, no seat, no parachute, and a New Testament. Take whatever action you think necessary. Justify these actions in a military paper, not to exceed 2000 words, to be handed in upon landing.

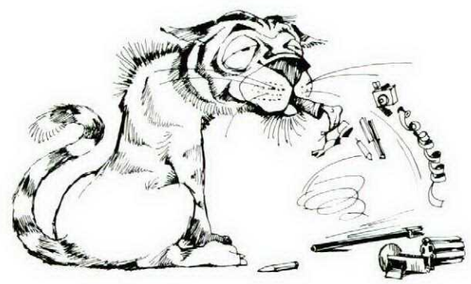
Based on the Wankel engine, design a replacement propulsion system for the CF101 Voodoo. The design should emphasize fuel economy, and increasing the performance of the CF101 by a factor of at least 2. Discuss briefly the aerodynamic parameters of the air intake ducts on this installation.



Derive a formula to produce JP4 from normal air base refuse. Emphasize anti-pollution both in the manufacturing process, and with respect to jet engine exhaust gas criteria. If necessary H_2O may be used as an additive in the process.

Provide photographic evidence that the Weapons Systems problem outlined below was solved correctly. 8 x 10 glossy colour prints of each step are required. You will be provided with the following: a box camera, a Kodachrome film, a developing tank, Ansco chemicals, and two handfuls of magnesium powder.

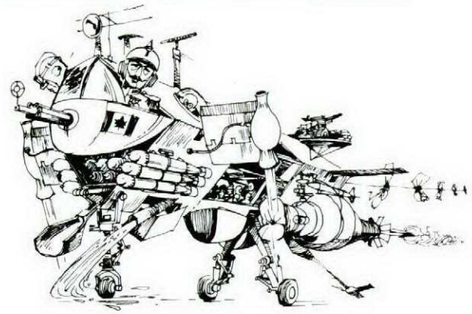
You, one round of twenty millimetre ammunition, and a disassembled M39 cannon will be placed in a locked dark room. Seven minutes later a starved Bengal tiger will be admitted. Take whatever action you feel appropriate, being prepared to justify your decisions and methods.



Produce mathematical analyses of the effect on aircraft stability of 250 lbs of frozen lobster and four 40 oz. bottles of Lamb's Rum when placed in

(a) the tail of a CF100
(b) the empty photo nose of a CF5, or
(c) the weapons bay of the CF101.

Based on the principles of a box kite, design a suitable airframe for the LRPA, to use the propulsion system proposed previously. To encourage participation by Canadian government and industry to the greatest extent possible, your design should reflect the latest developments in STOL wings, and incorporate water scoop and dump doors for forestry protection work. The airframe will carry 8,263 kg of electronic gear, 16 M23 torpedoes, and suitable air-to-air defenses. The aircraft will be expected to have 22 hours endurance at a cruise speed of 114 kts, and a dash capability to Mach 1.45, while carrying its normal complement of 28 personnel. It should be capable of use as an inflight refueler, and with minor reconfiguration, as a cargo aircraft.

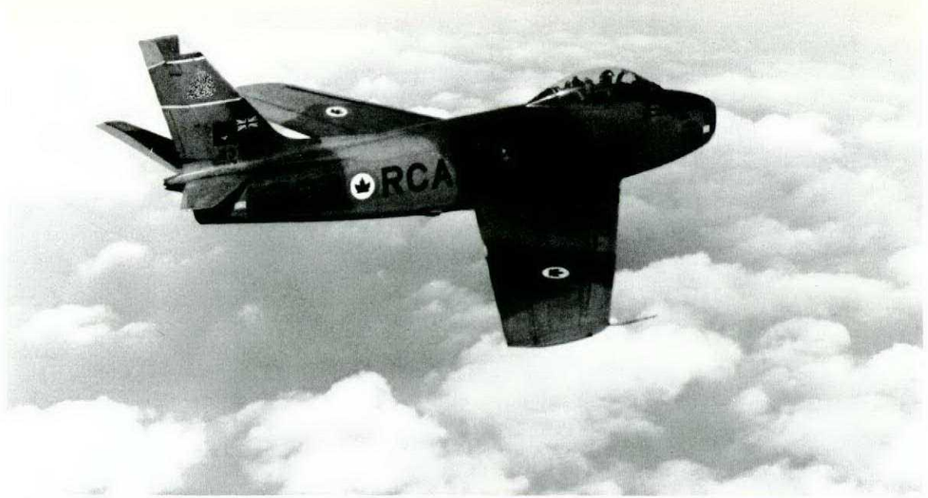


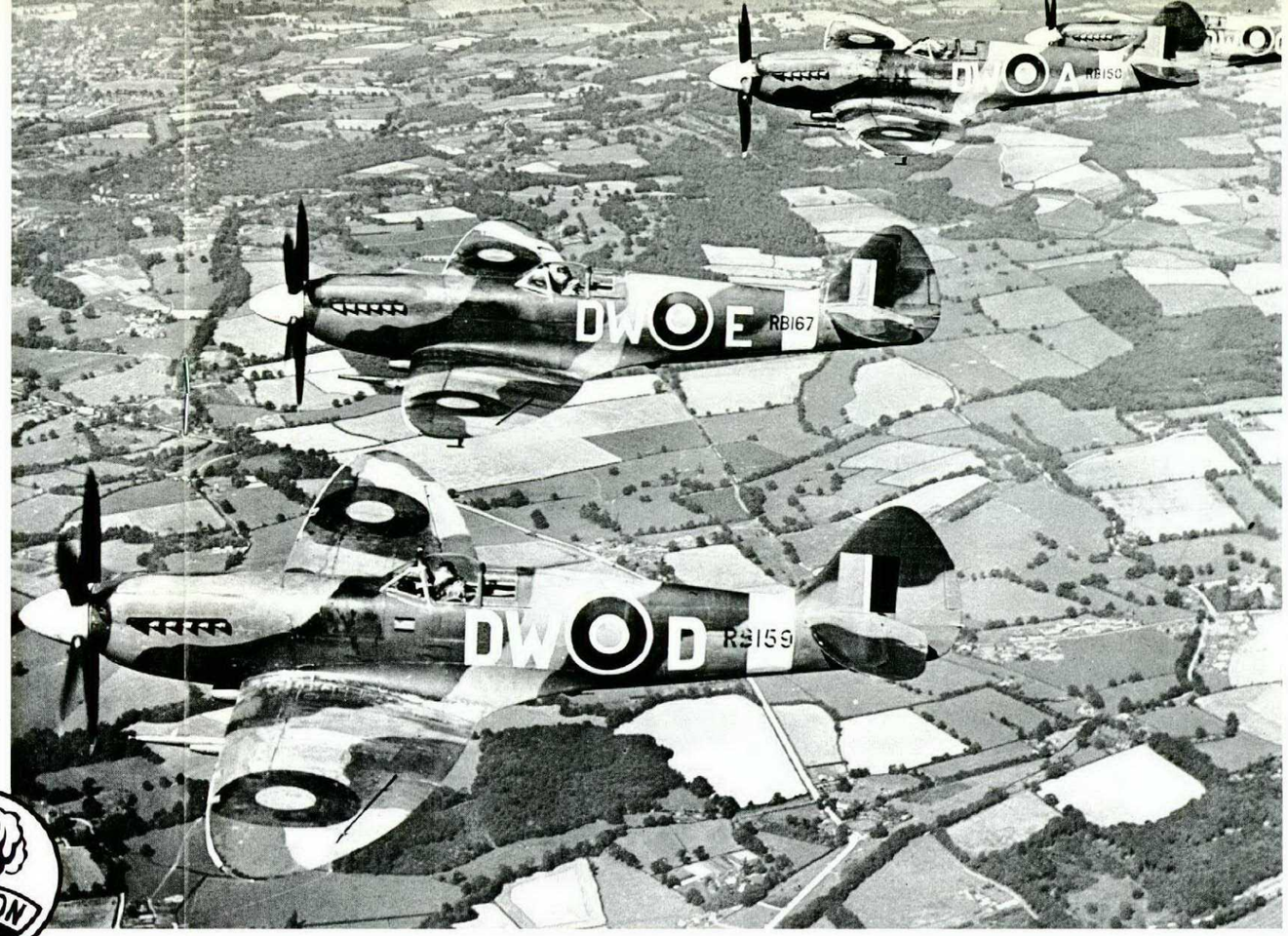
Summarize each electronic device you would expect to find on the LRPA outlined above under the headings of operational use, weight, environmental limitations, power requirements, major circuitry components, maintenance requirements, antenna radiation patterns, and test equipment required. Discuss in detail and reproduce flow charts for the inertial navigation system, the air-to-air fire control system, and the laser ranging terrain avoidance radar system. Assuming a squadron of 24 aircraft, describe the organization which would be required to maintain the avionics, covering the personnel by trade and pay level, and detailing the lab requirements by size, power requirements, and environmental control devices.

Design a single form, capable of ADP, to replace all forms which are currently used by AERE officers. Discuss the use of each entry in detail considering the legal aspects of both Napoleonic and British Common Law. Correlate each entry to the use made of it by the appropriate NDHQ and Command staff. List any information you do not record on a form: (NOTE – more than two items on this list indicate an inadequacy in the previous part of the question).

(a) Write a PER on each of your instructors. Draft a career plan for each, considering his education, motivation, interests and personal views on integration.

(b) Comment coherently on the recently announced plans to replace 50% of all aircraft technicians and AERE officers with female equivalents. Compare with the impact of integration.





414 SQUADRON

A Noble Past

Number 414 Army Co-operation Squadron was formed on 13th August, 1941, at Croydon, England. Attached to No. 83 Group of the Second Tactical Air Force, the Squadron spent the first eleven months of service training on Lysander and Tomahawk aircraft.

Operational flying took place in Mustang and Spitfire aircraft. The Squadron was instrumental in providing photo reconnaissance, intelligence, and ground attacks for both the Dieppe Raid and the Allied Invasion of Europe. These activities, known as "populars" and "rhubarbs", earned many honours for Squadron pilots. The Squadron accounted for 29 enemy aircraft destroyed and 11 damaged, as well as the destruction of 76 locomotives and 12 naval vessels. Squadron personnel earned 16 Distinguished Flying Crosses, two Bars and three Mentions in Dispatches.

In four years of operation, 28 Squadron members gave their lives. Four pilots who bailed out successfully became prisoners of war. 414 Squadron was disbanded on the 7th August, 1945 at Luneburg, Germany.

The Squadron was re-activated as 414 Photo Squadron at RCAF Station Rockcliffe on 1st April 1947. Utilizing Dakota aircraft, the Squadron undertook the task of photographing some 323,754 square miles of Canada's North. Working out of such places as Norman Wells and Yellowknife, the Squadron, away from wives and families for many months at a time distinguished itself by providing photographic data of areas that previously had been uncharted. This task completed, the Squadron was disbanded on 31st October, 1950.

Re-activation began on 1st November, 1952 as 414 Fighter Squadron, at Bagotville, P.Q. Flying the Mark IV Sabre, Canada's premier fighting aircraft, the Squadron was destined to go to Europe as part of No. 4 Fighter Wing, Baden-Soellingen, West Germany. This transition was accomplished by an exercise known as "Leap Frog IV" which saw the Squadron fly overseas via Goose Bay, Bluie West 1, Keflavik, and Lossiemouth. Departing Bagotville on 27th August, 1953, the Squadron arrived at Baden-Soellingen on 4th September 1953.

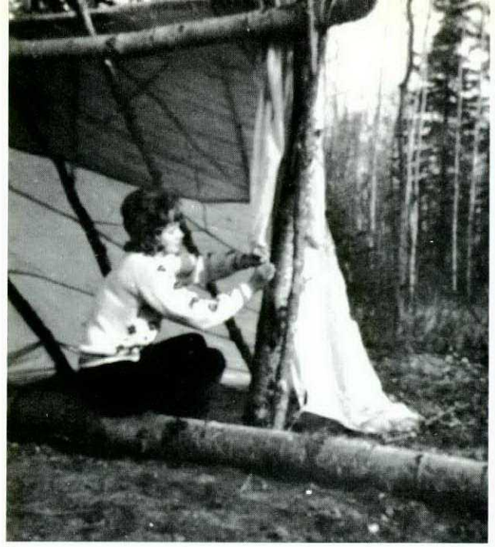
Flying the Sabre IV, V and VI, the Squadron spent the next four years in the air defence of Western Europe. The Squadron was disbanded on 14th July, 1957, to make room for the arrival of 419 Squadron and the CF100.

Two weeks later, on 5th August 1957 the Squadron was again re-activated with CF100 aircraft as 414 All Weather Fighter Squadron in North Bay, Ontario.

414 continued to fly the CF100 in Canada's Air Defence until 1962 when the "Canuck" was phased out of service as an all weather interceptor and replaced with the CF101 aircraft. The squadron was disbanded again on 30th June 1964.

In September 1967 at St. Hubert, P.Q., the Squadron was re-activated once again. Formed from the nucleus of the Electronic Warfare Unit, the Squadron was re-designated 414 (EW) Squadron under the command of Wing Commander P.B. St. Louis. With the now venerable CF100, the Squadron was tasked with the role of providing electronic counter measures as training for units of Air Defence Command and North American Air Defence Command (NORAD).

Now, after 25 years of active service with both the Royal Canadian Air Force and the Canadian Forces, the Squadron's Colours are being presented. Every serving member and ex-member of 414 Squadron can point with pride at a history filled with many honours. ■



Survival Standdown

I think it is fairly safe to say that there probably aren't very many drivers airframe in the CF who haven't enjoyed the benefits of a government subsidized camping trip to Jarvis Lake. There we have all ingested our fill or more of survival hints – as a matter of fact that's about all the ingesting there was for our course, aside from the inevitable high calorie jelly beans and quarts of Labrador tea.

Having completed the course (i.e. "survived"), most of us return to our units confident of our ability to hack it in the bush if it should ever come to that, and try to avoid even thinking about that particular two week period again. N'est-ce pas?

Well, some time ago it occurred to me that I was being a little remiss in my duties. Here I was chock full of all that good knowledge and experience, habitually flying with a "crewman" who hadn't been initiated. The thought first hit me while flying across the southern boundary of Algonquin Park, pointing out the flora and fauna to my Tiger Moth front-seater (and bride) Judy. What if the engine should quit (as it has before) and the forced landing not work out so well? (So far we're batting a thousand in that department.) There would be the two of us sitting on the ground beside a little yellow pile of canvas, wood and wire, and all it would take as a complicating factor would be my own incapacitation. Then we would be both literally and figuratively in the woods.

I discussed this problem with my wife, and we decided (unanimously) to run our own private little survival school.

Setting up this private survival seminar presented no real problems whatever. We had survival kits containing sleeping bags, rations, signalling devices, dinghys and all the other goodies available for the Tiger Moth. Since we weren't going to have the plane with us on this jaunt we simply stuffed the kits into two rucksacks, dressed ourselves appropriately, leapt into our trusty station wagon and headed out for the hinterlands. Even for this little trip we took the precaution of "filing a flightplan" by telling the local RCMP what we had in mind and when we would return. Going missing in a car due to axle failure, road cave-in or other disaster would be just as dangerous as the aeronautical version thereof and twice as ironic.

The area we chose as the "crash scene" was on a small lake about forty miles due north of Cold Lake. I had flown over it almost daily during my "104" course and it looked very nice. In mid October of course it gets a little coolish in Northern Alberta, but it was well before freeze-up so the lake was available for purposes of washing and drinking. We were able to drive our station wagon to within a few hundred yards of the site we eventually selected.

Survival school stresses the necessity of carrying out survival actions in a definite order of priority, but since we began this exercise neither injured nor desirous of rescue we amended the list and set to work on the preparation of the shelter which was to be our dwelling for the next few days. Each packsack contained eight gores of parachute material so we decided on the "para lean-to" as the obvious answer. Judy had never handled a hatchet before so a little dual was required, but soon she was bringing in saplings for the framework like a latter day Paul Bunyan. In less than an hour we completed a highly serviceable lean-to and were ready to get to work on the amenities (if a pine bough bed and a massive wall to wall firepit may be so described). When this was done we set up signalling fires and laid out our personal signalling equipment. I explained to Judy the importance of the radio beacon and also the necessity of backups in the form of flares, heliographs, cloth panels etc., and for practice we fired a few pengun flares out over the lake.

Most of the rest of the early evening was spent collecting a horrendous pile of firewood which we hoped would lend a little warmth to the occasion and maybe even make the morning bearable. This being done we sat down to our first meal. Oh yes, I mentioned certain "supplementary items" earlier. The supplementary items in this case were inch thick t-bone steaks wrapped with loving care and a few baby onions in aluminum foil and thrown in the coals of the fire. It is my considered opinion that practice starving falls in the same category as practice bleeding. We were out there to learn, not to suffer, and in accordance with this philosophy we brought along a few bottles of rosé as well. It is undoubtedly true that in the case of the "real thing" there would be neither rosé nor steaks aboard the aerodyne – but there would be a little 30 calibre M-1 carbine which is more than adequate for the provision of venison, and the Ojibway bird snare and fishnets would probably yield other tasty protein. To keep the ecologists happy we bought steaks instead. Fair ball?

Need I point out that the entire evening was a complete success? There we were, wined, dined, totally isolated, sitting before a roaring fire with a skyful of stars overhead, the rustle of the wind in the pines, a few wolves howling in the background – everything.

Anyway, I could tell you more about the ensuing days and nights, but I'm sure you all have the basic point or "message" by now. We were able to combine some very worthwhile survival training and refresher with a most pleasureable camping weekend. If ever in the course of my military flying I end up following up a nylon letdown with a night in the woods I am totally confident of my ability to survive comfortably – and so is my wife. As a fringe benefit I can now fly the "Tiger" with the assurance that Judy too is able to cope with any eventualities.

The date on my scroll from RCAF Survival School is eight years in the past. According to regulations there is no need for me to ever subject myself to all that again – but common sense dictates periodic practice to maintain this or any other skill.

Try a "Survival Weekend" yourself. It's well worth the trouble.

The New GPH 200 Throwaway

The DND, Ministry of Transport and the US Federal Aviation Administration will revise the effective date of changes to the IFR Flip Documents from a 28-day to a 56-day cycle. This change will take effect on 24 April 1975 and will be accomplished without adversely affecting operational safety. It is emphasized that safety will not be compromised in that Class I Notam will continue to be issued as necessary to update all current publications.

The advantages of this conversion include a 50% saving in paper usage and reduced production and distributing costs. In addition the gradually increasing cost of the Flip Documents will be lower and DND will save sufficiently to fund the "New Approved GPH 200 Throwaway". Further advantage of the change from the safety standpoint, reduced costs will give DND the opportunity to update other areas in the Flip Documents. A spin off advantage is a more stabilized system. Effective 24 April 1975, new revision/amendment cycles will be adopted as follows:

GPH Publications

GPH 206 –	**Enroute Low Altitude Chart**	**– reissued every 56 days**
GPH 207 –	**Enroute High Altitude Chart**	**– reissued every 56 days**
GPH 200 –	**Terminal Low Altitude Canada and North Atlantic**	**– reissued every 56 days**
GPH 201 –	**Terminal High Altitude Canada and North Atlantic**	**– reissued every 56 days**
GPH 205 –	**Enroute Supplement Canada and North Atlantic**	**– reissued every 56 days**
GPH 205N –	**Enroute Northern Supplement**	**– reissued every 56 days**
GPH 200A –	**Enroute VFR Chart Supplement Canada**	**– reissued every 112 days**
GPH 204 –	**Flight Planning and Procedures Canada and North Atlantic**	**– reissued twice yearly (Spring and Autumn)**
GPH 209 –	**Manual of Instrument Approach Procedure Criteria**	**– reissued as required**

With the change of the revision cycle the date shown on the lower left hand corner of each **Terminal Chart** will be the **effective date for the use of the procedure** or the **information published thereon.** Accordingly, with effect from 24 April 1975 the bold face stamp on the plan view of certain Terminal Charts which emphasized the effective date will no longer be used. In all cases the Terminal Chart date at the lower left hand corner will in future be the effective date.

Included with the new 56-day revision cycle comes the long awaited disposable GPH 200. The operational requirement for the updating of this document has been confirmed and supported by the Air Commands and heartily endorsed by DFS, DARTS and D Carto (Air). The Throwaway GPH 200 was approved as follows:

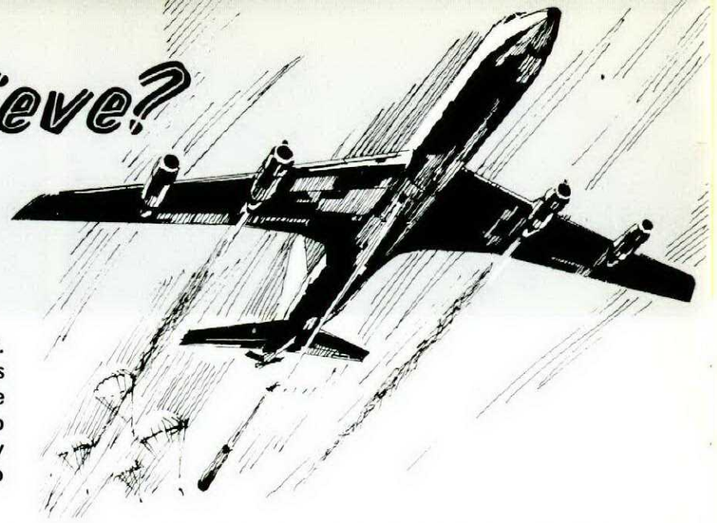
- The Document will consist of two volumes West Canada and East Canada and North Atlantic. The division of the East and West volumes will be at Thunder Bay. The East will run straight north and include Thunder Bay, Thule, Sondrestrom, Keflavik, Reykjavik, Bermuda and Lajis Airbases. Whereas the West will run straight north to 60° latitude and then cover all 60° latitude north. In other words will include Thunder Bay West and all airports listed in the GPH 200N (GPH 200N will be cancelled).
- The binding of the two volumes will consist of the "perfect" binding now in use by the USAF letdown books. To make the GPH 201 Throwaway compatible with the GPH 200 Throwaway the ring binding will be replaced by the "perfect" binding.
- The Throwaway will be on a scheduled 56-day cycle period effective 24 April 75.
- The paper used will be of the same quality currently used in the USAF letdown books.

The 56-day publication cycle, change to newsprint, and the use of the "perfect" binding should find a great number of supporters among users, although there are bound to be some complaints about any change. In any case, resolution of problem areas can be discussed after a reasonable trial period, say one year.

The GPH 200 Throwaway is planned for the first publication to be issued on the new 56-day cycle effective date 24 April 75. However through the printer's eyes this date is not far off considering final approval was not given until 12 Feb 75, so it is quite possible that the initial issue could be delayed for difficulties that arise in the publication that cannot be foreseen at this time. Even if delayed, it does not present any problem because the amendments will still be issued to the current GPH 200 and the GPH 200N, 2 January 1975 issue will stay in effect until such time as the Throwaway GPH 200 is in the individual user's hand. Nevertheless, delayed or not delayed, fear not, your new disposable GPH 200 is on its way.

Captain R. Breeden
DCarto (Air) 4-2

Would U Believe?



A short monthly feature dedicated to the proposition that all is not gloom and doom in the flight safety business. In point of fact some aviators do luck in . . . even if no one ever lucks out.

The story you are about to read is true. Only the names, dates, places and persons involved have been omitted – to protect the innocent naturally. This story has cropped up in rumor form for years but was finally "legitimatized" by MAC Flyer. Our thanks to the fine publication for this fascinating tale.

A four-engine jet transport made a full stop taxi-back landing after four hours of a scheduled 4:45 training flight. One of the pilots on the aircraft needed an ILS approach to complete an instrument check, but the ILS was out of service at the home airfield. A base nearby had an operational ILS, but the instructor pilot knew the round trip and approach would take longer than the 45 minutes he had remaining. He guesstimated that the 15,000 pounds of fuel they had remaining would be enough, so he contacted the wing command post and requested permission to overfly the mission by 30 minutes. The request was approved by operations and the supervisor of flying.

The crew then took off, flew to the other base, and completed an ILS low approach without incident. Heading for home, the instructor realized that the fuel situation was getting tight so he shut down two engines to conserve what little he had left (a normal procedure in this type aircraft). Starting a long straight-in descent with the fuel critically low, the instructor told the crew to prepare for bailout and stand by. Passing approximately 12,000 feet, one of the remaining two engines flamed out due to fuel exhaustion and the IP ordered bailout. Five crewmembers left without incident or injury but the instructor pilot elected to stick with the now single-engine transport. ***Two and a half miles from the end of the runway the last engine starved to death*** and the determined instructor prepared to land the strangely silent bird.

He got the landing gear down and selected 30 degrees of flaps on final, but he was a little short. The aircraft touched down in the clear area, 640 feet short of the overrun, skipped once, and rolled onto the overrun. The pilot turned the aircraft off the runway onto the first taxiway and, in the words of the report, "... set the brakes and disembarked". Damage to the aircraft was confined to a lost crew entrance door which was jettisoned for the bailout!

TIMELY ONE-EIGHTY

The pilot of a light civil aircraft was on a cross-country flight to an airport located on an island. The weather along the route had been poor, but, understanding that his destination weather would hold up, the intrepid pilot pressed on. Lowering ceilings forced him to descend to stay out of the clouds and he finally found himself only 50 feet above the water approaching the island. Even that low, he was in and out of clouds and moderate rain with virtually no forward visibility. Suddenly the grayish mist ahead got darker and the pilot – not really knowing what was ahead of him – threw the aircraft into a steep left bank. *In the turn, his landing gear hit the side of a near vertical hill and collapsed!* The aircraft, firmly on the ground now, slid down the slope and stopped on a level area at the bottom, heading in the opposite direction.

The aircraft was badly bent, but the pilot and his passenger stepped out with only slight injuries!

cont'd from page 2

left the crash site on 23 October. The CFB North Bay divers remained to assist and provide technical advice until 26 October at which time the No. 1 Field Squadron contingent returned to CFB Petawawa.

The divers from CFB North Bay provided invaluable technical advice and underwater assistance to both the OPP and RCE divers. Using their personal diving equipment they worked underwater for long periods with the full knowledge that safety hazards existed and that fuel from the wreckage would cause their wetsuits to deteriorate. Safety hazards were present in the forms of active egress system charges plus large pieces of jagged metal which were obscured by a layer of fine silt at the bottom of the lake. Notwithstanding the hazards and the fact that scuba diving was an off-duty hobby, the divers from CFB North Bay willingly offered their services to aid in a quick recovery of evidence for the Board of Inquiry.

Cpl Brian O'Cain, a Safety System Technician was a member of the team which assisted the Board of Inquiry in determining the condition of life support and egress systems. He also had the difficult job of de-arming the egress system components. Although most of the de-arming took place on shore, Cpl O'Cain, while standing on the side of a rubber raft, successfully removed one catapult firing mechanism from within a mass of twisted metal and wire suspended from the floating crane. His actions allowed the section of wreckage to be safely handled and transported to the quarantine area on the Base. When not actively working with recovered components, Cpl O'Cain volunteered as a member of a boat crew which attended the needs of the divers.

The RCE divers returned to Four Mile Lake 29 October to continue the recovery of small pieces of wreckage required by the Board of Inquiry. The arduous task of searching in three feet of silt and mud for small instrument gauges and heavy engine accessories took two full weeks. At times the divers would come to the surface covered with slimy muck looking like veritable denizens of the deep.

The determination and ingenuity displayed by all personnel concerned with the recovery of CF100788 added immeasurably to the success of the operation. During the various phases of the recovery operation it was necessary to fabricate or obtain some special equipment to aid in the recovery of the wreckage. Base Maintenance Land personnel fabricated a number of different size slings from both 5/8 inch steel cable and ¾ inch nylon rope. To aid in the underwater collection of small metal pieces, two baskets made of anti-skid wire mesh on a metal frame were fabricated by Base Aircraft Maintenance personnel. Later the baskets were found to be too cumbersome but a wire mesh "medical stretcher" was found to be ideal for the job. An underwater metal detector was used but proved unrealiable because disturbed silt kept obscuring the indicator. The large number of metal objects also caused erratic operation of the indicator. Rather than grope blindly in the silt – a job which eventually was necessary during a thorough grid search of the crash site – ¼ inch steel bar stock probes, four feet long, were used successfully to locate some large components such as generators and pumps. Small pieces of structure were also located using the probes.

The CFB North Bay Ground Search Party proved a most valuable asset during the whole recovery operation. Besides the job of pollution control, they provided and operated portable communications equipment; transported rations, equipment and personnel when required; performed housekeeping and security duties in and around the CP; and, in general, assisted as much as possible with the actual recovery of aircraft wreckage.

Because the aircraft crashed near its home base, there was no difficulty obtaining personnel with the technical expertise to assist in the recovery operation. The two scuba divers from CFB North Bay belonged to the aviation support trades – an airframe technician and an aero engine technician,

as did the safety systems technician who de-activated the egress system. Other aviation support trades were available to assist the recovery crew and the Board of Inquiry during the operation.

The overall operation was considered very effective with almost 100 percent of the aircraft being recovered. The assistance provided by the engineers of Mobile Command's No. 1 Field Squadron contributed greatly to the successful recovery of wreckage from the bottom of Four Mile Lake.

In September 1974 the two aircraft technicians – Sgt V.V. Yahnke and Cpl L.B. Laycock, now both stationed in Europe, were awarded the Air Defence Commander's Certificate of Outstanding Achievement for having displayed exceptional professional competence and personal courage during their participation in the diving operation to recover CF100788.

PERMISSIVE CONTROLLING

Major K. Cameron
SATCO Lahr

It's a fine day – VFR, bags of blue sky, vis OK, about four to five miles with some haze, half a dozen aircraft in the circuit (plus the odd IFR arrival). Situation normal. A CF104 is on Base leg, cleared for a low approach. At the same time a T33 on a ticket ride has his ATC clearance and requests takeoff. The aerodrome controller instructs the T33 to HOLD, informing him of the CF104 traffic. The T-Bird pilot says, "I have the 104 Tower. I've got lots of time to make it". The controller, in an attempt to accommodate the T33, clears him for takeoff and the T33 taxis on to the runway, lines up and starts his takeoff roll. To be sure the controller intended to go back to the approaching 104 and advise him about the departing T33, however, just at that time another aircraft called for landing instructions, tying up the frequency with a rather long-winded position report. Meanwhile the 104 is closing rapidly on the T33. Fortunately the pilot sees the departing aircraft and breaks off his low approach. What did we have here? A Near Miss in the making due to permissive controlling? Unusual? Perhaps, but these situations have occurred and they can be prevented.

Article 201 of the ATC Bible, CFP 164, outlines in detail the functions of ATC. The service that our military ATC controllers provide to aircrew is such that we need not take a back seat to anyone in the business. As traffic increases, so do the inherent dangers found in crowded circuits, busy radar patterns, increased terminal traffic and heavier activity on ramps and taxiways. All of these things demand increased vigilance from the controller, above all we must ensure that we are not being too permissive in our control of traffic; in the air or on the ground. Some of our readers may say, "Me, a permissive controller? NEVER! Fair enough, however it won't hurt to give the subject some thought. If we take note of a few of the many areas where such dangers lurk, your own experience, know-how and common sense will expand your thinking on this dangerous practice.

Here's another case: An Argus is a mile back on final, cleared for a touch and go. A truck down at the far end of the runway requests clearance (on FM) to cross the live runway and is cleared by the ground controller to cross with "No Delay". The driver of the truck is a bit slow in starting across and guess what? The Argus pilot sees the truck on the runway and overshoots. The pilot is just a trifle choked up, and understandably so. An example of permissive controlling or just plain poor controlling? What do you think?

If there is one location in the circuit where the permissive controller is likely to be caught out it has to be the "turn to base leg". For example, in a typical jet circuit, suppose there is straight-in traffic, radar or otherwise established inside 10NM. A second aircraft is off the break in the downwind position, about to turn base leg. The trap is now closing. Traffic information will not help since the second aircraft is "belly-up" to the final approach area, as he turns into final, thus the straight-in traffic is obscured from view. To take avoiding action, the second aircraft can only attempt to tighten up the final turn and go around, overshoot straight-ahead (ie across the line of the approach), or pull up – all hazardous manoeuvres, as the pilot cannot see the traffic he is attempting to avoid. Overshooting the straight-in aircraft doesn't help much either. To avert situations like this the control decision on the second aircraft (ie return to initial or extend downwind) must be made before it turns base leg. Most controllers have found this out the hard way and have learned the lesson, but believe it or not, it's still happening! In our example the permissive controller made his decision too late. The result: a dangerous situation for two aircraft.

Loose controlling is not confined to the VFR area. Here is another scene. The weather is IFR and our RATCON is busy. The Terminal Controller (TC) who incidently is also the shift supervisor, is happily recovering aircraft. The Arrival and Final Controllers are busy, in fact the Arrival Controller finds himself with five aircraft under his control; the Final Controllers have one aircraft each. The system is overloaded. Meanwhile the TC has a couple more that he's planning to hand off (slough off) to Arrival shortly. Just then the surveillance radar packs up. Guess what? Our TC finds himself saddled with more aircraft than he has alternate missed approaches for, or Nav Aids to handle. Couldn't happen? It has! Was the Terminal Controller too permissive? Did he overload the system? You be the judge.

Reviewing actual cases, such as these, may increase your awareness of the pitfalls of permissive controlling. No controller will deny that once in a while he has been a little permissive. The point is, that if we think about this problem it will help us or others to avoid it. Don't let it happen to you or your staff! There can be no doubt that the controller should provide the most expeditious service possible. Also, most controllers will attempt to accommodate the pilot's wishes to avoid delays. Approval of all clearance requests however, to speed up runway acceptance rate may not achieve the optimum in traffic handling unless the principles of positive control are applied. Remember, if in doubt, break off the approach. In the final analysis the aircrew will thank you for it. Ensure your control decisions are FAIL SAFE!

cont'd from page 4

feed upon. Tragedy was averted here not by good management but by simple luck – an input which we cannot count upon.

What lessons can be learned from this 18 year old accident resurrected from the National Archives?

(1) **Flight Planning.** We've come a long way since '57 in the provision of EO fuel consumption charts etc. Pilots and navigators must become and remain proficient in their use however, or it's all for nought.

(2) **Fuel Gauges.** Still have their tricky little inadequacies. T33s and CF104s both get inaccurate just when things are getting twitchy for JP-4 – and undoubtedly this goes for other birds as well.

(3) **Fuel Consumption.** There are a lot of ways to get sucked in in this area. Lower than requested cruise altitude assignment, higher than expected headwinds, lower than expected tailwinds, or an engine with a healthier than average appetite or any combination thereof can leave any of us sucking fumes.

–which leads us to

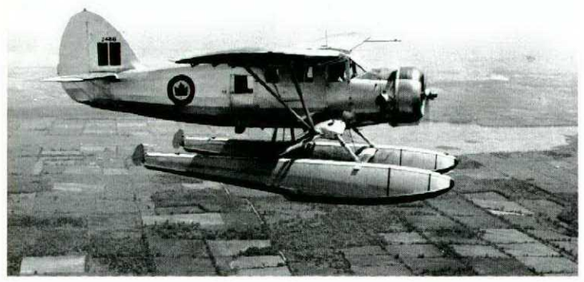
(4) **Pilot Factor.** It is the responsibility of each pilot to monitor all factors affecting a flight and to take timely action to avoid difficulties. It's no use declaring emergency fuel when the fires are going out – do it early and give everyone – yourself included – a break. No one is going to look sideways at you for landing before your destination to pick up a little extra fuel but there's an awful lot of explaining to be done if you plunk in just half a mile short.

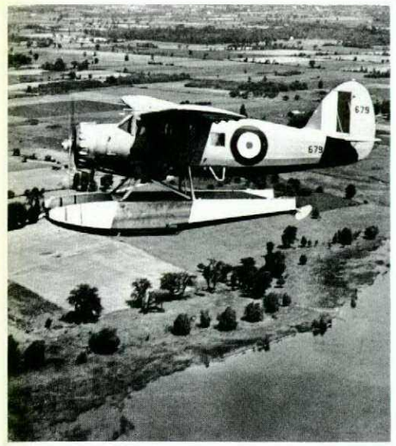
NOORDUYN NORSEMAN

Long before the familiar DeHavilland Beaver and Otter came to dominate the bush flying scene the world over, another Canadian aviation classic was making its imprint in aviation history.

The "Noorduyn Norseman" designed and built in Canada was by all accounts the first non-United States product ever purchased by the (then) United States Army Air Force. In American service it was known unimaginatively as the UC 64.

Norsemen served the RCAF in many marks and models and on wheels, skis and floats. During the second world war they were employed for liaison flying and as wireless trainers, while postwar they were the workhorse of search and rescue units until the advent of the Otter caused their phaseout from military service. The throaty roar of the Norseman's 800 horsepower Pratt and Whitney Wasp has been heard in all climes from the high Arctic to the Antarctic. Trappers, prospectors and fishermen in large numbers still gain access to many of Canada's northern regions through the services of commercially operated Norsemen some of which are veterans of thirty or more years of service.





On 28 Sep 51 Squadron Leader D.R. Cuthbertson took off in a float equipped Norseman aircraft to evacuate a seriously injured civilian from Hopedale on the Labrador coast. Despite adverse weather conditions and strong winds buffeting the coast causing swells and waves up to five feet high, Squadron Leader Cuthbertson made a successful landing and the seriously injured civilian was emplaned. S/L Cuthbertson then proceeded sixty miles south east of Hopedale to pick up a missionary's young son who was in critical condition after having been mauled by husky dogs. Just as the injured youngster was placed on board the aircraft, a heavy bank of fog rolled in, necessitating a takeoff being carried out with a ceiling of only 100 feet. This was done successfully despite the presence of only basic flight instruments in the aircraft and the complete absence of navigation aids. Four days later, S/L Cuthbertson made another hazardous trip to Saglek Bay to evacuate a civilian who was in critical condition due to frost bitten and gangrenous feet.

For his efforts in the above citation Squadron Leader Cuthbertson was awarded the Air Force Cross.

THE AIR FORCE CROSS

A Commonwealth medal formerly awarded to Canadian Aviators was granted for two possible reasons:

(1) Exceptional valour, courage, or devotion to duty while flying other than on active operations against the enemy, or

(2) Distinguished service to aviation in actual flying.

The award was made to officers and Warrant Officers while airmen below the rank of Warrant Officers received the Air Force Medal. The suspending ribbon for the Air Force Cross is diagonally striped wine and white. The medal itself is well illustrated in the accompanying photo.

GEN FROM 210

The aim of the CH135 helicopter training flight was to practice pinnacle landings. This objective was decided by the pilot. The flight proceeded uneventfully south through the area to the pinnacle.

The pinnacle is approximately 800 ft ASL. The hill top is solid rock and is relatively flat. It is approximately 200 meters in diameter and is devoid of vegetation except for small patches of moss and small bushes. A rock ridge approximately 6-8 feet high runs across the north western portion of the hill top in a north easterly – south westerly direction.

On arrival in the vicinity of the pinnacle, the pilot carried out a circular recce of the pinnacle. He then proceeded to shoot on approach to the south eastern portion of the hill top on an approximate heading of 300° – 300°. He terminated the approach in a hover and then proceeded to taxi forward to the northwest portion of the hill top. His intention was to assess the wind at various positions on the top of the hill. He then taxied to the left approximately 50 feet, halted and then initiated a sideways taxi back to the right. At this time all crewmembers felt the aircraft jolt and the pilot commenced a right pedal turn. The flight engineer heard a high pitched noise from the area of the transmission and advised the pilot to land immediately. Both pilot and co-pilot noticed that the Master Caution light was illuminated.

The turn was described as normal at first but after approximately 180° the rate of turn increased rapidly and became

uncontrollable. The aircraft spun approximately twice before contacting the ground. It came to rest on the left side of the fuselage in the snow on the LEE side of the rock ledge.

The crew evacuated the aircraft and activated their emergency URT 503 transmitter. After waiting about 15 minutes, the pilot re-entered the aircraft and turned on the radios. He immediately heard another helicopter calling him so he advised the crew of the accident. A CH135 helicopter arrived about 20 minutes later and evacuated the crew.

The cause of this accident is as yet undetermined, however, technical investigation of various aircraft components is continuing.

We lost a Voodoo recently under rather unusual circumstances. This summary of the events is published to point out how easily things can "get off the track" and how drastic the results of seemingly minor actions can be. Since the Board of Inquiry on this matter is not closed we are providing this report for information only.

The aircraft was in the build-up phase of second cycle Depot Level Inspection and Repair (DLIR) at Winnipeg.

Electrical power was applied to the aircraft, and 18 minutes later an instrument technician closed two circuit breakers to energize the fuel quantity system for testing. Approximately two minutes later an explosion and fire occurred in the fuselage fuel cell area extensively damaging the aircraft fuselage.

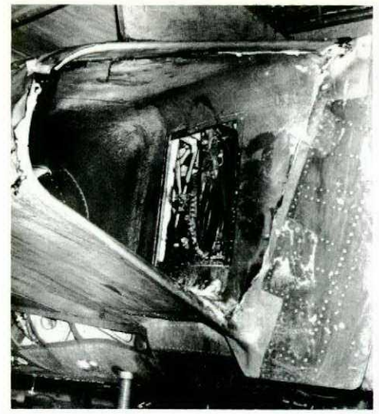
Investigation has revealed that upon arrival at DLIR the aircraft was defuelled and the entire fuel system purged and pressurized with nitrogen. During the overhaul two fuselage fuel cells were replaced and the system was again pressurized – this time with air. The use of air resulted in diffusion of a volatile fuel/air mixture throughout the fuel system. This procedure is general practice, and since the applicable engineering Memorandum is open to interpretation the aircraft fuel systems were not purged or inerted following reassembly.

The source of ignition was traced to a miswired circuit breaker panel which resulted in 115V AC being fed to a circuit normally supplied by 28V DC. This led to overloading of the fuel cell thermistors resulting in temperatures sufficient to ignite the fuel/air mixture. While a visual inspection of the panel installation is required and was carried out, the Engineering Report does not require a wiring verification.

The following preventive measures have been instituted:

a. an inspection of the circuit breaker panel prior to installation is required;
b. a visual checklist to verify the circuit breaker wiring has been prepared; and
c. a verification of the wiring hook up by means of a continuity check following installation must be carried out.

In addition, the feasibility and desirability of purging and inerting the fuel system following reassembly are being studied.



Comments to the editor

As I am presently going through the trauma of being a staff officer in an operations branch, with flight safety officers clamoring at the fences to give wise advice on flying damaged aircraft, I must admit I found your selection of good shows in the Nov/Dec issue of Flight Comment slightly more than ominous towards their advice.

It is not my intent, nor is it my prerogative to either belittle or challenge the decision of Capt Pennie or Lt Lucas. Being a helicopter pilot I can appreciate how the adrenalin was responding during that flight and how tasty a beer was at the end of that duty day. These officers were in a very unenviable situation and had to make a difficult decision, and that in itself deserves the praise of us all.

My contest is with DFS and those on the staff that select the Good Shows to be published in Flight Comment. When one lives in a constant deluge of flak over aircrew deciding on when to fly damaged aircraft, from the entire clan at flight safety, it is just a touch difficult to masticate this type of publicity in a well read magazine.

From your scant three paragraph summary of a rather complex situation it appears that the pilots deserve an M.B. for their dedication and bravery rather than a good show.

It certainly appears as if you at DFS have condoned a successful violation of one of your pet peeves. Which raises a rather interesting point of conjecture. What would DFS have said had this mission failed? I'd wager; – "I told you so".

Maj A.J. Wildrum
HQ 10 TAG

I think the gentleman from 10 TAG is confusing apples and oranges.

If one wants to take the purist view, it is arguable whether or not the article in question should have appeared in Flight Comment. Naturally in expressing flight safety you cannot condone the continuation of a mission when accident potential exists. Hopefully though, this case will indicate that we can take a realistic view of flight operations without having to resort to the bureaucratic reaction "I told you so".

Here a decision was made to proceed to the nearest hospital with a critically ill passenger on board, even though a warning light had illuminated. This decision was based on:

- *Competent assessment of an indicated malfunction probably assisted by previous information provided through the flight safety net;*
- *Command awareness of the situation through communication links; and*
- *The fact that the mission was one of life or death, not the training type which occurs 98% of the time.*

Under the circumstances, the pilots made the right choice and had an actual transmission failure made itself evident, the precautions taken and other warning indicators would have undoubtedly enabled a safe landing of the aircraft. In the possible event of total mission failure (loss of aircraft, crew and passenger) any investigation would most certainly have absolved the crew of blame or dereliction of responsibility.

What we are really trying to say is that, at times, the mission itself becomes more important than the means of accomplishing it. Decisions, whether to continue or not, have to be made on that basis.

REQUEST FOR ARTIFACTS RE D-DAY 6 JUNE 1944

The Canadian War Museum (CWM) is preparing a revision of its Second World War displays. A requirement exists for the donation of military artifacts related to D-Day concerning, in particular, Canadian servicemen.

Any of your readers who can assist the museum are requested to contact Mr L.F. Murray, Chief Curator, Canadian War Museum, 330 Sussex Drive, Ottawa, Ontario, K1A 0M8.

L.F. Murray
Chief Curator

Comments

Safety is an Element of Good Business

There are two factors responsible for the changes in emphasis we experience in our Air Force life. One is the principle of "Management by Exception" which allows "squeaking wheels to get grease in time to save the bearings". Another one is the transfer of personnel which brings fresh ideas on how the mission can be better accomplished. Between the two we certainly see many shifts of attention! However, there is one notable exception.

The Air Force's safety program has continued to receive much interest. There has not been any change in priority here. Why? The ever-increasing cost of weapon systems and personnel training enhances the importance of protecting our combat assets. The money crunch has slowed down acquisition of new weapon systems, and cuts in Department of Defence personnel mean we have to work harder with less people in order to maintain aging assets in a combat-ready posture.

Our business is to maintain the highest state of combat readiness possible for each tax dollar spent. To achieve this goal, we must utilize our assets as efficiently as any civilian organization. Any room for argument? Consequently, a quotation I once saw is very applicable to our situation. "Safety is an element of good business and regardless of its motives, humanitarian or economic, the cost is more easily sustained than the price paid for the lack of it". (Author unknown). This approach to safety really has a lot of appeal. Scare tactics have short lived effects. Humorous approaches certainly have their place. But, this rational, common sense approach of implying "safety is an element of good business" challenges me. It says to me that a professional manager has the responsibility and capability to ensure that his personnel have a safe and productive work environment. As Air Force managers we are able to exercise any number of controls to achieve this safe working environment we seek.

An examination of losses of men and materials in preventable accidents during the past year demonstrates that room is left for improvement. No business can tolerate the waste of valuable assets, for soon it would go bankrupt. Similarly, the Air Force cannot continue to waste aircraft, missiles, and men without losing a credible state of readiness. Think of us as a business, and the Air Force's safety program as one of the management tools which keeps us "solvent".

Capt E.K. Johnson
USAF Kit

NATIONAL DEFENCE HEADQUARTERS
DIRECTORATE OF FLIGHT SAFETY

COL R. D. SCHULTZ
DIRECTOR OF FLIGHT SAFETY

MAJ F.K. LAWLOR
Education and analysis

LCOL F. G. VILLENEUVE
Investigation and prevention

Editor Capt John D. Williams

Art & Layout J.A. Dubord
DDDS 7 Graphic Arts

Flight Comment is produced by the NDHQ Directorate of Flight Safety. The contents do not necessarily reflect official policy and unless otherwise stated should not be construed as regulations, orders or directives. Contributions, comments and criticism are welcome; the promotion of flight safety is best served by disseminating ideas and on-the-job experience. Send submissions to: Editor, Flight Comment, NDHQ/DFS, Ottawa, Ontario, K1A 0K2. Telephone: Area Code (613) 995-7037. Subscription orders should be directed to Information Canada, Ottawa, Ontario, K1A 0S9. Annual subscription rate is $1.50 for Canada and $2.50 for other countries. Remittance should be made payable to the Receiver General of Canada.

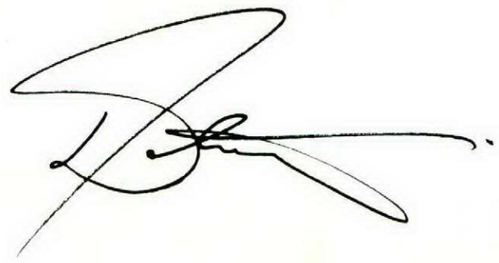
Progress may be a look backwards

With a new Editor of Flight Comment you will notice a slight change in magazine format and an intentional increase in emphasis on past experience. That we can benefit from the mistakes and successes of others is well accepted, however the lessons learned appear to be lost too quickly or do not get transmitted to everyone concerned.

Historians often express concern that happenings in the past may be misinterpreted or distorted by virtue of being examined in the light of subsequent events – a process which they refer to as "reading history backwards". We, in today's world of aviation safety, are often called upon to reconstruct the chain of events from the vantage point of hindsight. Many times we recognize a similarity between occurrences – a similarity which undoubtedly resulted in the phrase "there are no new accidents, only new people having the same old accidents".

Obviously every occurrence results from an exclusive chain of events and singular existence in time, and in terms of the material and personnel involved. Accidents are therefore never exactly the *same* but are often so similar that there is no doubt that foresight and the application of proper, timely preventive measures could have broken the fateful sequence.

Our continuing task is to learn from previous mistakes – to be constantly aware of the hazardous situations which are part of an accident producing formula. The lessons of our aviation history are well documented so by highlighting significant events we hope to make history work for us.



COL R. D. SCHULTZ
DIRECTOR OF FLIGHT SAFETY